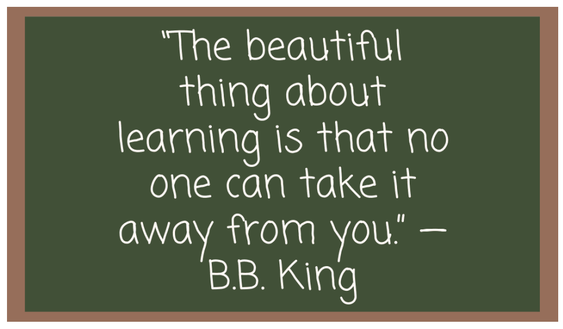
01.Intro to Time Series and Forecasting



Problem Statement:

Mobiplus.

1. Understand the future demands.
2. MAPE (Mean Average Percentage Error)
3. How can we calculate a Range?

Q. Why forcasting is important?

↳ Plan better.

↳ Advertisements.

Q. What will happen if we overforcast?

⇒ 1. Inventory cost will be high.

2. Expiry of the products.

Q. Underforcasting?

⇒ 1. Lot of unmet demands.

2. Loss of goodwill.

	DATE	Sales
0	2001-01-01	6519.0
1	2001-02-01	6654.0
2	2001-03-01	7332.0
3	2001-04-01	7332.0
4	2001-05-01	8240.0

Date

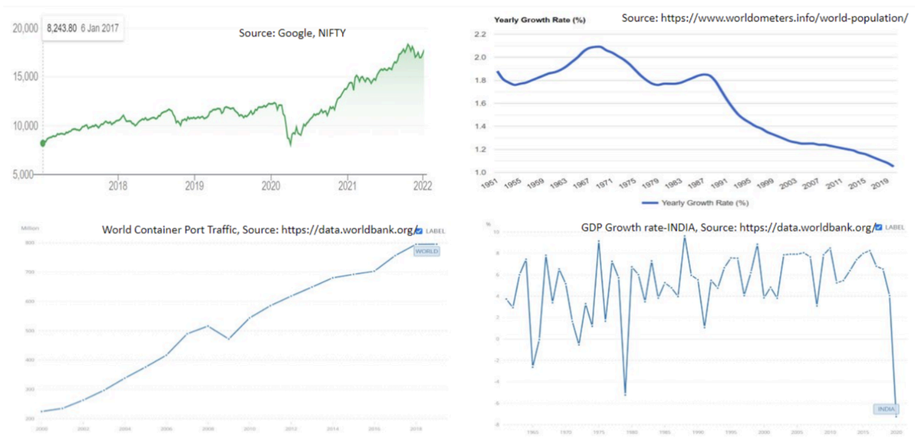
Sales

1. Datapoints are not independent.

2. Time delta b/w two datapoint should be constant.

Examples:

1. Stock Market
2. Sales Price
3. Weather
4. Population



If the data contains only 3% of the missing values, dropping them is a good way of handling the missing data in a time series model.
Is the statement True or False?

2 users have participated

A	True	50%
B ✓	False	50%

Why is using mean values of the data not optimal for filling the missing values?

0 users have participated

✓	A	The filled value may be different from local neighbours.	0%
	B	As the time series has dates, it's not possible to find mean.	0%
	C	Mean values will work fine even incase of missing data in time series.	0%

Time Series Decomposition:

$$T.S. = \underset{b(t)}{\text{Trend}} + \underset{S(t)}{\text{Seasonality}} + \underset{e(t)}{\text{error}}$$

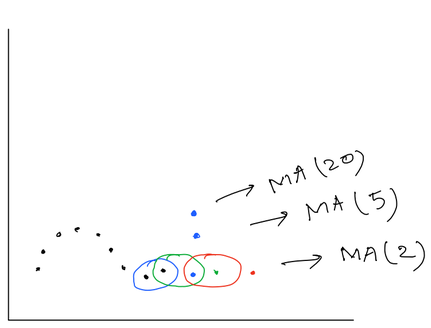
Trend → Increasing/Decreasing

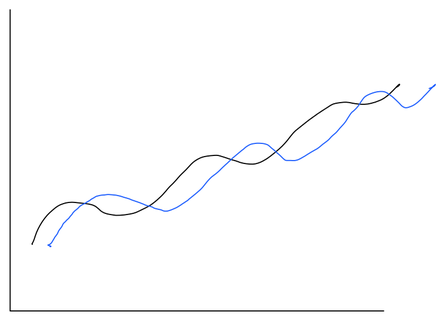
Seasonality → Repeated Pattern.

Q. What is Forcasting?

⇒ Prediction for the timeseries data.

Moving Average (MA):





Mathematically:

$y \rightarrow$ current/Actual, $\hat{y} \rightarrow$ prediction

$$\hat{y} = \frac{y_t + y_{t-1} + \cdots + y_{t-k}}{k}$$

$k \rightarrow$ No of datapoints.

True/False: Can linear interpolation be thaught of as a special case of centered moving average?

4 users have participated

✓	A	True	100%
	B	False	0%

Which one of the following is not a seasonal signal?

0 users have participated

	A	Movie ticket sales	0%
	B	Temperature in Delhi	0%
✓	C	Number of children born each month	0%
	D	Car sales in India	0%

Multiplicative Decomposition:

$$T.S. = b(t) * S(t) * e(t)$$